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I. — *The ἀναρμοὶ ὄγκοι of Heraclides and Asclepiades*

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HERACLIDES of Heracleia in Pontus, a disciple of Plato, and Asclepiades of Prusa, a physician of the Ciceronian age, proposed a form of corpuscular theory of matter, which, after much discussion,¹ is still a subject of many doubts. Some of these I hope to clear up in the course of this paper.

The first question relates to our sources of information — the doxographic tradition. Two points appear to be above suspicion; namely, that these thinkers propounded essentially identical theories of the constitution of matter, Asclepiades appropriating the doctrine of his predecessor; and that they were agreed in calling the molecules ἀναρμοὶ ὄγκοι. Beyond this, almost everything may be said to be doubtful, since conflicting testimony may be cited on almost every point. We cannot hope to make any progress, therefore, without first determining the relative value and credibility of our sources.

To begin with Heraclides, the testimony to his philosophical doctrine is rather meagre; but in recent years there has been put forward a theory which, if verified, would consider-

¹ On Heraclides there is an excellent work: Otto Voss, *de Heraclidis Pontici Vita et Scriptis* (Rostock Diss.), Rostochii, 1896. I have failed to procure Chr. W. Gumpert, *Asclepiadis Bithyni Fragmenta*, Vinariae, 1794. The work of Hans v. Vilas, *Der Arzt und Philosoph Asclepiades von Bithynien*, Wien und Leipzig, 1903, is wholly unsatisfactory. Zeller's account of these philosophers is peculiarly unfortunate. The treatment of Asclepiades in Susemihl, *Gesch. der gr. Litt. in der Alexandrinerzeit*, II, 428 ff., is in its way admirable.

ably extend our knowledge of it. This theory, most fully elaborated by Paul Tannery,¹ is that the Pythagorean Ecphantus of Syracuse, represented in the doxographic tradition as the propounder of an atomic theory, was only a *dialogi persona* in the *Περὶ φύσεως* of Heraclides.

I do not propose to repeat the argument of Tannery, which seems to me in itself conclusive,² but rather to supplement it with another which is equally if not more convincing. If we piece together the statements attributed to Ecphantus and Heraclides touching their molecular theory, we discover that they present a doctrine which is in almost every essential particular the counterpart of the views attributed to Asclepiades. Thus Ecphantus is described as in psychology a sensationist;³ and the same view is ascribed to Asclepiades.⁴ The teaching of Heraclides on this head is not reported, nor is his view concerning the existence of empty space; but in

¹ See Paul Tannery, "Ephante de Syracuse," *Archiv für Gesch. der Philosophie*, XI (1898), 263-269. M. Tannery was apparently not aware that the same conjecture had been made two years earlier by Otto Voss, *de Heraclidis Pontici Vita et Scriptis*, Rostock, 1896, p. 64. According to Voss, Hicetas also is to be regarded in the same light as Ecphantus; but by parity of reasoning Philolaus might be claimed as belonging to the same class, since the two points of doctrine attributed to Hicetas are also ascribed to Philolaus. It is best to dissociate the personalities. So far as concerns Hicetas, he should be considered rather with reference to the great interest in *εἰρήματα* in Alexandrine times. On this see Bruskern, *de Rerum Inventarum Scriptoribus Graecis*, Bonn, 1864.

² The forged writings of Ocellus and Timaeus are a part of the same campaign to claim everything for the Pythagoreans. Probably neither was a real character; the latter, however, was helped to a seemingly historical existence by Aristotle's occasional method of quoting the *Timaeus* of Plato; e.g. *de Anima* 406^b 26 ὁ Τίμαιος φυσιολογεί τὴν ψυχὴν κινεῖν τὸ σῶμα (cp. Plato, *Tim.* 34 A, 36 C), and *de Sensu* 437^b 15 ὥσπερ ὁ Τιμαῖος λέγει (cp. *Tim.* 45 D). This suggests how Ecphantus and possibly Hicetas might come, in the course of uncritical excerpting, to be regarded as historical persons.

³ Hippol. *Refut.* I, 15 (Diels, *Dox.*, 566, 11) ἔφη μὴ εἶναι ἀληθινὴν τῶν ὄντων λαβεῖν γνῶσιν, ὁρῶν δὲ ὡς νομίζειν (giving the text of Diels, *Vorsokr.*,² 265, 29 ff.).

⁴ Sextus Empir., *adv. Math.* VII, 201 ὅτι γὰρ ἐγένοντο τινες τὸ τοιοῦτο ἀξιοῦντες, προὔπτον πεποίηκεν Ἀντίοχος ὁ ἀπὸ τῆς Ἀκαδημίας, ἐν δευτέρῳ τῶν κανονικῶν ῥητῶς γράψας ταῦτα "ἄλλος δὲ τις, ἐν λατρικῇ μὲν οὐδενὸς δεύτερος, ἀπτόμενος δὲ καὶ φιλοσοφίας, ἐπέθετο τὰς μὲν αἰσθήσεις ὄντως καὶ ἀληθῶς ἀντιλήψεις εἶναι, λόγῳ δὲ μηδὲν ὅλως ἡμᾶς καταλαμβάνειν." ἔοικε γὰρ διὰ τούτων ὁ Ἀντίοχος . . . Ἀσκληπιάδην τὸν λατρὸν αἰνίττεσθαι, ἀναιροῦντα μὲν τὸ ἡγεμονικόν, κατὰ δὲ τὸν αὐτὸν χρόνον αὐτῷ γενόμενον.

regard to this later point Ecphantus and Asclepiades are once more in agreement.¹

We cannot now complete this comparison of the two groups of opinions, the relation of which will become clear as we study the doxographic tradition. To this we must now turn and begin with Asclepiades. Our earliest authorities for his teachings date from the end of the second century A.D. They are Galen and Sextus Empiricus, each of whom claims to have written at considerable length on Asclepiades.² As neither treatise has been preserved, we are here dependent on other works of these authors; yet in view of the presumptive familiarity of these writers with the thought of Asclepiades, we are naturally predisposed to accept their testimony. From Galen, if we except works certainly or presumably spurious,³ we learn little of the corpuscular theory of Asclepiades. It amounts practically to this: that he posited molecules and void⁴ as the foundation of existence; that he called the molecules *ἀναρμοὶ ὄγκοι*⁵ and gave the name of *πόροι*⁶ to the void intervals between them; that the theory of Asclepiades,

¹ For Ecphantus, see Aëtius, I, 3, 19 (*Dox.* 286^b 7). For Asclepiades, see Sextus Empir., *adv. Math.* VIII, 220 Ἀσκληπιάδῃ δὲ ὡς ἐνστάσεως νοητῶν ὄγκων ἐν νοητοῖς ἀραιώμασιν and ib. III, 5 νοητοὶ τινες ἐν ἡμῖν πόροι. The πόροι are definitely stated to be void by Galen, *de Usu Partium* VI, 13 (III, 470 K.) ὦν οὐδὲν οὐτ' ἐγγίνωσκεν Ἀσκληπιάδης οὐτ', εἴπερ ἔγνω, δυνατὸν ἦν αὐτῷ τὰς αἰτλας ἐξευρεῖν εἰς ὄγκους καὶ κενὸν ἀνάγοντι τῶν γιγνομένων ἀπάντων τὰς ἀρχάς; *de Simplic. Medic.* A. 14 (XI, 405 K.) ἐπισκέπτεσθαι δέ, ὡς εἰρηται, μὴ μόνον εἰ παχυμερὲς ἔστιν ἢ λεπτομερὲς ἢ τῶν ἐξεταζομένων φαρμάκων οὐσία, ἀλλ' εἰ καὶ ἀραιὰ καὶ πυκνὴ. λέγω δὴ ἀραιὰν ἥς τὰ μόρια διαλαμβάνεται χώραις κεναῖς, ἐπισταμένων ἡμῶν δηλονότι καὶ μεμνημένων τὴν οὐσίαν, ὅτι μὴ καθάπερ Ἐπικούρῳ καὶ Ἀσκληπιάδῃ δοκεῖ, ἀλλ' ἔστιν ἀέρος πλήρης ἐν ἅπασιν τοῖς ἀραιοῖς σώμασιν ἢ κενὴ χώρα.

² Cp. Sextus Empir., *adv. Math.* VII, 202. Is the treatise there mentioned the Ἑμπειρικά (or Ἱατρικά, cp. I, 202) ὑπομνήματα referred to *adv. Math.* I, 61? Cp. Galen, *de Usu Partium*, v, 5. His treatise, like that of Sextus, is no longer extant.

³ Like the *Introductio* and the *Historia Philosophica*.

⁴ See above, n. 1, and below, p. 8, n. 2.

⁵ They are called *ἀναρμα σώματα*, *de Usu Partium*, XVII, 1 (IV, 350 K.); cp. *de Differ. Morbor.* (VI, 839 K.) οὐκ οὖν ἐν ἔστι τὸ τῶν ζώων σώμα, καθάπερ ἢ ἄτομος ἢ Ἐπικούρειος ἢ τῶν ἀνάρμων τι τῶν Ἀσκληπιάδου. In *de Usu Partium*, XI, 8 (III, 873 K.) we meet ταῖς τ' Ἐπικουρείοις ἀτόμοις καὶ τοῖς Ἀσκληπιαδεῖοις ὄγκοις. See below, p. 8, n. 2.

⁶ Ib.

equally with that of Epicurus, ruled out the purposive ordering of things by Nature operating to beneficent ends;¹ and that the two views might be practically identified also in another regard, inasmuch as both equally excluded the possibility of ἀλλοίωσις (qualitative change in the Aristotelian sense) in drugs, the drugs being incapable of alienating their qualities.²

This last statement is especially interesting, since it is accompanied with the remark that Asclepiades merely changed the terminology of Epicurus and Democritus, substituting *δγκοι* for *ἄτομοι* and *πόροι* for *τὸ κενόν*; but in the particular application of the passage the fundamental doctrine of the Atomists is misrepresented, since, as everybody knows, the atoms of Democritus and Epicurus possessed no qualities to alienate. We shall presently see that in this case the doctrine of the Atomists is assimilated to that of Asclepiades, with which Galen was best acquainted. When assimilation occurs in later sources, it is always in the opposite direction, — assimilation of the doctrine of Asclepiades to that of the Atomists. But it is most important to note the fact that contamination has already begun, and that Asclepiades is supposed merely to have changed terms while holding fast to the same opinions. That Galen spoke advisedly of the indefeasible qualities of the molecules of Asclepiades is shown by his statement of his doctrine of nutrition,³ in which, con-

¹ This is the chief ground of Galen's loud complaints, *de Usu Partium*, v, 5; vi, 12, 13; xvii, 1. Asclepiades, like Epicurus, merely insisted on the naturalistic, mechanical interpretation of nature inherited from the pre-Socratics. Galen's attempt in this treatise to show that Hippocrates was a teleologist is instructive by its very failure. He, if anybody, could make out a case for Hippocrates, assuming that there were grounds for taking that view.

² *Theriac. ad Pison.* (xiv, 250 K.) εἰ μὲν γὰρ ἐξ ἀτόμου κατὰ τὸν Ἐπικοῦρου τε καὶ Δημοκρίτου λόγον συνειστήκει τὰ πάντα, ἡ ἐκ τινων δγκων καὶ πόρων κατὰ τὸν ἱατρὸν Ἀσκληπιάδην. καὶ γὰρ οὗτος ἀλλάξας τὰ ὀνόματα μόνον καὶ ἀντὶ μὲν τῶν ἀτόμων τοὺς δγκους, ἀντὶ δὲ τοῦ κενοῦ τοὺς πόρους λέγων τὴν αὐτὴν ἐκείνοις τῶν δντων οὐσίαν εἶναι βουλόμενος· εἰκότως ἂν ἔμεινεν ἀναλλοίωτα τὰ φάρμακα, κατὰ μὴδὲν τρέπεσθαι μὴδ' ὅλως ἐξίστασθαι τῆς αὐτῶν ποιότητος δυνάμενα.

³ *Definit. Medic.* xcix (xix, 373 K.) οἱ δὲ ἐξ ὥμων ἔφασαν τὰς ἀναδόσεις γίνεσθαι, ὥσπερ καὶ Ἀσκληπιάδης ὁ Βιθυνός. This same doctrine is ascribed to Asclepiades by Galen, *ib.* p. 379 and xv, 247; by Caelius Aurelianus, *A.M.* i, 14, pp. 42 and 44, and by Celsus, i, *praef.* p. 4 *Acceduntque Asclepiadis aemuli, qui*

trary to the Aristotelian doctrine of the assimilation of foods, involving ἀλλοιώσεις or the alienation of qualities,¹ Asclepiades maintained the undigested (raw) distribution of the finely divided particles of food to the several parts of the organism.

Sextus Empiricus was, like Galen, a physician, and doubtless wrote somewhat later. He shows an acquaintance with the writings of Asclepiades, but his hold on the distinctive doctrines of the physician was less firm. In his extant works he regards him chiefly as a philosopher, and where he misrepresents his doctrine it is in the direction of assimilating it to that of the Atomists. Sextus presents three tables of the doctrines of philosophers, which constitute one of the most perplexing problems in the doxographic literature.² The first

omnia ista vana et supervacua esse proponunt : nihil enim concoqui, sed crudam materiam, sicut assumpta est, in corpus omne diduci. In this Asclepiades followed the lead of Erasistratus (cp. Susemihl, *Gesch. der gr. Litt. in der Alexandrinerzeit*, I, 806, nn. 151, 152), who in turn reproduced the doctrine of Anaxagoras. See Diels, *Vorsokr.*,² 303, § 45, and Zeller, I, 987, n. 1.

¹ Perhaps the most succinct definition of digestion from the Aristotelian point of view, which is shared by Galen, is in [Arist.] *Probl.* XII, 7, 907^a 18 ἡ γὰρ πέψις ἀλλοίωσις ἐστὶ τοῦ πεπτομένου. There is a subtle alchemism at work in the body which 'assimilates' foods, of whatever quality, to the several parts of the body, which are thereby nurtured and augmented. The Aristotelian doctrine of ἀλλοιώσεις in this, as in other points, appealed strongly to Galen and others who were under the influence of Aristotle and the Stoics. The doctrine of Asclepiades, Erasistratus, and Anaxagoras was also the doctrine of Hippocrates, according to whom the elemental substances preserved in the body the selfsame δύναμις (quality) which they possessed before entering into its composition. See Hippocrates, II. φύσις ἀνθρώπου, 3 (VI, 38 Littré). That Empedocles held the same opinion is a reasonable inference from what we learn of the blood in his system (Theophrastus, *de Sensu*, 10) as the vehicle of τροφή in the body, and of the function of water (not the elemental water, but water considered as a mixture of the elements) in the nutrition of plants. It is interesting to note how purely mechanical explanations, even of vital processes, appear so soon as any definite view is proposed. The 'subtle alchemy of life' is not a primitive conception, as some have fancied, who have attributed it to the early Ionians under the specious but (to them) unmeaning names of 'dynamism' or 'vitalism.' These conceptions are rightly associated with alchemy, which drew its inspiration from the mysterious and indefinable ἀλλοιώσεις of Aristotle.

² Diels has touched upon it lightly in his *Doxographi Graeci*, 248 ff. He there points out the relation existing between Sextus Empir. *Hypot.* III, 30-32 and *adv. Math.* IX, 359 ff., and between these on the one hand and the tables preserved by [Galen] *Histor. Philos.* c. 18 and [Clement] *Recogn.* VIII, 15 on the other. He does not discuss the third table of Sextus Empir., *adv. Math.* x,

table¹ divides philosophers into two groups, the first positing corporeal, the second incorporeal elements. The second group comprises the Pythagoreans, with their numbers (*ἀριθμοί*), the mathematicians, with their limits of bodies (*τὰ πέρατα τῶν σωμάτων*), and the Platonists, with their Ideas (*ἰδέαι*). The second table² contains in general the same list of names, with certain omissions and additions,³ arranged in approximately the same order; but there is no distinction made between those who posited corporeal, and those who posited incorporeal elements. Indeed, the omission of the Platonists and the substitution of Strato, with his qualities (*ποιότητες*), at the end of the table, gives to it an entirely different character from that of the first table, and probably, as we shall see, led to the supposition that the numbers of the Pythagoreans, like the 'qualities' of Strato, were corporeal.⁴

310 ff., though it greatly complicates the problem. I am inclined, with Diels, to regard many of the differences between *Hypot.* III, 30-32 and *adv. Math.* IX, 359 as due to the additions of Sextus; but the division of the latter table into two groups and the omission of Strato (or rather, perhaps, the addition of Strato to the former table) are intimately connected. But, if that be so, can we attribute this change to Sextus? See below, n. 4. The analytical table, *adv. Math.* X, 310 ff., is probably the work of Sextus. The error in regard to Heraclides and Asclepiades, noted below, can hardly be supposed to date from an earlier period.

¹ *Adv. Math.* IX, 359 ff.

² *Hypot.* III, 30-32. Diels has well shown how closely parallel this table runs to [Galen] *Histor. Philos.* c. 18 and [Clement] *Recogn.* VIII, 15, and has traced it to a Stoic source, which he dates between Seneca and the Antonines. Perhaps the way in which Sextus alludes to the *ἀποιοις ὄλη* of the Stoics (*Hypot.* III, 31; cp. *adv. Math.* X, 312) tends to confirm his conclusion. I may add here that the failure to distinguish in this table (as in the first) between corporeal and incorporeal elements may have been in part responsible for the attribution of 'ideas' to Democritus in Pseudo-Clement (see Diels, *Dox.*, 251); for in our first table Plato's *ἰδέαι* are mentioned (though omitted in the second), and in Pseudo-Clement Plato appears only as postulating the four elements: "ignem, aquam, aërem, terram."

³ On these see Diels, *Dox.*, 249 ff.

⁴ See above, n. 2, for Democritus and his "ideas." Here we may note that the "limits of bodies," regarded as the elements of the *μαθηματικοί* — they are omitted by Pseudo-Clement — naturally suggested something corporeal. The numbers of the Pythagoreans were, I think, unquestionably corporeal, and so Aristotle regarded them. See my article "*Πέρας* and "*Ἀπειρον*" in the Pythagorean Philosophy," *Archiv für Gesch. der Philos.*, XIV (1901), 384-399, and Burnet, *Early Greek Philosophy*,² 337 ff. Burnet, whose latest statement is much in-

The third table¹ is of an entirely different character, classifying minutely the elements posited by the several philosophers. In the first table Asclepiades is mentioned among those whose elements are corporeal as positing *ἀναρμοὶ ὄγκοι*; in the second, Heraclides and Asclepiades occur with their *ἀναρμοὶ ὄγκοι*, and the statement is added that their elements are frangible and qualitatively determined, in evident agreement with the view of Anaxagoras, who 'attributed every sensible quality to his *ὁμοιομέρειαι*';² in the third, Anaxagoras, Democritus, Epicurus, Heraclides, and Asclepiades are classed among those who posited elements infinite in number; but a sharp distinction is drawn between their respective views, Anaxagoras being contrasted with the others on the ground that his elements were qualitatively like the things begotten of them, whereas the other group of philoso-

debted to my article, makes it seem probable that the Pythagoreans called their solid units *ὄγκοι*. But this fact had quite dropped out of the consciousness of these late epitomists. If, therefore, as seems probable, they invented the doctrine of Ecphantus, it was due to some such cause as the uncritical grouping of distantly related doctrines. It was a case of the night in which all objects look black. In Pseudo-Clement, Strato (for so we should doubtless read, with Diels, for *Callistratus*), with his "qualitates," follows immediately after Pythagoras, as Strato supplanted Plato in the second table of Sextus. Plato's Ideas were felt to be sadly out of place in this company. That this change was due to Sextus, is not altogether probable; as we have seen, Plato is in the list of Pseudo-Clement, though there is no mention of his Ideas, unless we look for them in the 'Ideas' attributed to Democritus.

¹ *Adv. Math.* x, 310 ff. Probably, though not certainly, this table owes its origin to Sextus himself, who elsewhere also shows acquaintance with less familiar accounts of philosophical doctrines, such as occur repeatedly in tables 3 and 1. In general the agreement is most palpable between tables 3 and 2. This makes all the more striking the contradiction in regard to Asclepiades.

² *Hypot.* III, 33 οὐ γὰρ δὴπον δυνησόμεθα καὶ τοῖς περὶ Ἀσκληπιάδην συγκατατίθεσθαι, θραυστὰ εἶναι τὰ στοιχεῖα λέγουσι καὶ ποιὰ, καὶ τοῖς περὶ Δημόκριτον, ἄτομα τὰτα εἶναι φάσκουσι καὶ ἄποια, καὶ τοῖς περὶ Ἀναξαγόραν, πᾶσαν αἰσθητὴν ποιότητα περὶ ταῖς ὁμοιομέρειαις ἀπολείπονσιν. For Anaxagoras, see above, p. 8, n. 3 and p. 9, n. 1. While Sextus is clearly somewhat uncertain in his mind as to the relation of Asclepiades and Anaxagoras, — if he had been sure of his facts he would hardly have treated the doctrines of the four men as quite distinct, — he makes it evident enough that Heraclides and Asclepiades, like Anaxagoras, regarded the *ὄγκοι* as qualitatively determined. That the qualities, or *δυνάμεις*, were indefeasible was shown above, p. 8, n. 3 and p. 9, n. 1. We shall presently find this same doctrine attributed to Ecphantus.

phers regarded the elements as qualitatively unlike the things begotten of them, though they differed among themselves in that Democritus and Epicurus considered their *ἄτομοι* as indivisible (*ἀπαθῆ*), while Heraclides and Asclepiades considered their *ἄναρμον ὄγκοι* as divisible (*παθητά*).¹

Here then we find a flat contradiction; in the second table the *ὄγκοι* are described as qualitatively determined and as congeners to the *ὁμοιομέρειαι* of Anaxagoras, while in the third they are grouped with the qualitatively indeterminate atoms of Democritus and Epicurus and contrasted with the *ὁμοιομέρειαι* of Anaxagoras. Whatever may have been the source of the third table, it is evident that on this point we may without hesitation accept the authority of the second, backed as it is by the testimony of Galen. There is, therefore, a clear case of contamination in the direction of assimilation to the doctrine of the Atomists.² But Sextus emphasizes in both tables the distinction between the indivisible *ἄτομοι*

¹ *Adv. Math.* x, 318 ἐξ ἀπείρων δ' ἐδόξασαν τὴν τῶν πραγμάτων γένεσιν οἱ περὶ Ἀναξαγόραν τὸν Κλαζομένιον καὶ Δημόκριτον καὶ Ἐπικούρου καὶ ἄλλοι παμπληθεῖς, ἀλλ' ὁ μὲν Ἀναξαγόρας ἐξ ὁμοίων τοῖς γεννωμένοις, οἱ δὲ περὶ τὸν Δημόκριτον καὶ Ἐπικούρου ἐξ ἀνομοίων τε καὶ ἀπαθῶν, τουτέστι τῶν ἀτόμων, οἱ δὲ περὶ τὸν Ποντικὸν Ἡρακλείδην καὶ Ἀσκληπιάδην ἐξ ἀνομοίων μὲν παθητῶν δέ, καθάπερ τῶν ἀνάρμων ὄγκων. One might be tempted to suspect an error in the text; but the carefully wrought analysis quite excludes that possibility. If, as I believe is manifest, there is an error here, it must be charged to Sextus and not to a copyist. I shall try presently to explain his error.

² Comparison with the case of Galen (see above, p. 8, n. 2) suggests that Sextus was troubled by the knotty problem of *ἀλλοίωσις*. He was clear that the Monists, who postulated a single, qualitatively determinate substance, e.g. water, implied *ἀλλοίωσις* in the development of other things out of their *ἀρχή* (cp. *adv. Math.* x, 328). Aristotle had insisted on this. But the means of effecting *ἀλλοίωσις* (according to Aristotle) used by the Atomists were not so clear: indeed, was the birth of quality out of the *ἄπειον* a clear case of *ἀλλοίωσις* at all? In regard to Anaxagoras (and Heraclides and Asclepiades also, apparently) the case was further complicated by the conception of *ἐπικράτεια*, according to which certain qualities predominating in the *μῆγμα* 'overpowered' others. Was there, or was there not, *ἀλλοίωσις* here? Aristotle did not know, though he was fain to think there was: was not the *πάντα ὁμοῦ* of Anaxagoras a *ἐν*? The elusive concept of *ἀλλοίωσις*, utterly foreign to the pre-Socratics, and disallowed by many in later times, wrought sad havoc in the history of Greek thought as recounted by the doxographers. On all this see my "Qualitative Change in Pre-Socratic Philosophy," in *Archiv für Gesch. der Philos.* xix (1906), 333-379.

and the frangible or divisible ὄγκοι, and in other connections he refers to the theory of pores, which are, like the ὄγκοι, too small to be seen. The molecules are eternally in motion, and are apparently the basis of a far-reaching system of effluences.¹

By combining the data furnished by Galen and Sextus we obtain a tolerably clear view of the corpuscular theory of Asclepiades; but the uncritical contamination of his doctrines by assimilation to the Atomic theory, the beginning of which we have seen in Sextus, was destined to go much farther. By the end of the second or the beginning of the third century the suggestion of Galen that the difference between Heraclides and Asclepiades on the one hand and the Atomists on the other, is merely one of names, had come to be the accepted view. This is stated by Dionysius,² Bishop of Alexandria, and the cloak of charity which envelops Democritus, Epicurus, Heraclides, and Asclepiades, is sufficiently ample to take in also Diodorus Cronus, who posited ἀμερῆ σώματα. All alike are said to advance a doctrine of strict atomism. Only the singular expression ἄναρμος³ remains to distinguish the molecule from the atom. Here and there it is still remembered that the molecules are frangible or divisible;⁴ but

¹ *Adv. Math.* III, 5 οὕτω γοῦν τρισὶν ὑποθέσεσι κεχρησθῆαι φαμεν τὸν Ἀσκληπιάδην εἰς κατασκευὴν τῆς τὸν πυρετὸν ἐμποιούσης ἐνστάσεως, μὴ μὲν ὅτι νοητοὶ τινὲς εἰσιν ἐν ἡμῶν πόροι, μεγέθει διαφέροντες ἀλλήλων, δευτέρᾳ δὲ ὅτι πάντοθεν ὑγροῦ μέρη καὶ πνεύματος ἐκ λόγῳ θεωρητῶν ὄγκων συνηράνισται δι' αἰῶνος ἀνηρεμήτων, τρίτῃ δὲ ὅτι ἀδιάλειπτοί τινες εἰς τὸ ἐκτὸς ἐξ ἡμῶν ἀποφοραὶ γίνονται, ποτὲ μὲν πλείους ποτὲ δὲ ἐλάττους πρὸς τὴν ἐνεστηκυῖαν περίστασιν. *Cp. adv. Math.* VIII, 220, and Sussehl, *op. cit.* II, 433, n. 84, and 436, n. 101.

² *Apud Euseb. P.E.* XIV, 23 ἀτόμους δὲ εἶναι φασιν ἀμφότεροι (Epicurus and Democritus) καὶ λέγεσθαι διὰ τὴν ἀλυτον στερρότητα. οἱ δὲ τὰς ἀτόμους μετονομάσαντες ἀμερῆ φασιν εἶναι σώματα τοῦ παντὸς μέρη ἐξ ὧν ἀδιαίρετων ὄντων συντίθεται τὰ πάντα καὶ εἰς αὐτὰ διαλύεται. καὶ τούτων φασὶ τῶν ἀμερῶν ὀνοματοποιῶν Διόδωρον (i.e. D. Cronus) γεγενῆσθαι. ὄνομα δέ, φασιν, αὐτοῖς ἄλλο Ἑρακλείδης θέμενος ἐκάλεσεν ὄγκους, παρ' οὗ καὶ Ἀσκληπιάδης ὁ ἱατρὸς ἐκκληρονόμησε τὸ ὄνομα. Dionysius is engaged in an attack on Epicurus for religious reasons; Asclepiades and Diodorus Cronus fall equally under the ban, more or less on general principles.

³ This name recurs in the table of [Galen] *Histor. Philos.* 18.

⁴ The list of Pseudo-Clement preserves the name ὄγκοι, but not the qualifying adjective. [Galen] *Introd.* XIV. 250 K. κατὰ δὲ Ἀσκληπιάδην στοιχεῖα ἀνθρώπου

in general this seems to have been ignored. Our fullest account of the doctrine of Asclepiades dates probably from the turn of the second and third centuries; and to it we must now give our attention.

It is contained in a medical treatise of Caelius Aurelianus,¹

δγκοι θραυστοὶ καὶ πόροι. Aëtius I, 13, 4 (Diels, *Dox.* 312b 10) Ἡρακλείδης θραύσματα. The expression θραύσματα is used also of Empedocles, Aet. I, 13, 1 (*Dox.* 312, 3); that these fragments are called ὁμοιομερῆ (ib.) is essentially true (see above, p. 9, n. 1), though the expression is transferred from the Aristotelian terminology applied to Anaxagoras. There can be no doubt that in the expression πρὸ τῶν στοιχείων there is a suggestion of the view that the θραύσματα of Empedocles were analogous to the ἀποιοὺς ὕλη of the Stoics, out of which the στοιχεῖα grew by taking on qualities (ἀλλοίωσις?). I have elsewhere shown that Aristotle was tempted to impute this doctrine to Empedocles and Anaxagoras, because he rashly assumed the ἐν of the σφαῖρος and the πάντα ὁμοῦ to be also ὅμοιον. See next note, where a sort of ἀποιοὺς ὕλη is imputed to Asclepiades. The ψήγματα or ψηγάματα attributed (ib.) to Heraclitus are of the same character; they refer to the influents and effluents of the Heraclitic ροή, typified by ἀναθυμίασις. All these δγκοι were of course θραυστοὶ, whether the philosophers felt called upon to state the fact or not. It was the Eleatic dialectic which made it necessary to affirm expressly or to deny the possibility of a τομὴ εἰς ἀπειρον.

¹ *De Morb. Acut.* I, 14 Primordia namque corporis primo constituerat (sc. Asclepiades) atomos, corpuscula intellectu sensa, sine ulla qualitate solita atque ex initio comitata, aeternum se moventia, quae suo incursu offensa, mutuis ictibus in infinita partium fragmenta solvantur magnitudine atque schemate differentia, quae rursum eundo sibi adiecta vel coniuncta omnia faciunt sensibilia, vim in semet mutationis habentia aut per magnitudinem aut per multitudinem aut per schema aut per ordinem. Nec, inquit, ratione carere videtur, quod nullius faciunt qualitatis corpora. Aliud enim partes, aliud universitatem sequitur; argentum denique album est, sed eius affricatio nigra: caprinum cornu nigrum, sed eius alba serrago. . . . Fieri autem vias complexione corpusculorum intellectu sensas, magnitudine et schemate differentes, per quas succorum ductus solito meatu percurrens, si nullo fuerit impedimento retentus, sanitas maneat, impeditus vero statione corpusculorum morbos efficiat. The parts italicized deserve a word. The clauses 'quae . . . sensibilia' and 'quod . . . corpora' imply that when the δγκοι are shivered they lose all qualitative determination, which they acquire in turn by a sort of συνερανισμός; but we know that such was not the belief of Asclepiades, whose σώματα were θραυστὰ καὶ ποιὰ (Sextus Empir. *Hyph.* II, 33). This applies not merely to the larger δγκοι, but also to the θραύσματα. Indeed this is stated in the clause 'Aliud enim partes, aliud universitatem sequitur,' and is implied in the illustrations of silver and horn. Similar cases were discussed by Anaxagoras (see Zeller, I, 987, n. 1), and doubtless the same explanation was given; to wit, that every larger δγκος or mass is a μῖγμα and has its quality determined by the predominant ingredient, and that in certain cases (compare the blackness of water and the whiteness of snow in Anaxagoras' illustration) the large mass showed a marked difference in (apparent) quality

who belongs to the fifth century, but translates a treatise of Soranus. Its chief characteristic is the extremely uncritical way in which contradictory statements are set down side by side without any apparent consciousness of their incongruity. The elements of Asclepiades are called atoms, corpuscles of a size to be apprehended only by the reason, devoid of permanent character, eternally in motion; and are said to meet in their career and to be shattered into infinitesimal fragments differing in size and shape, which in turn as they proceed to reunite, take on all sensible qualities adventitious or permanent, and possess in themselves the power to change in quality according to size, number, shape, and arrangement.¹ There are, furthermore, said to be formed by the combination of these corpuscles paths (pores) of a size to be apprehended only by the reason, differing in size and shape.

Here, then, we have atoms of the orthodox Atomistic sort, which possess only the one characteristic property of the δγκοι of Asclepiades, that they may be shivered into infinitesimal fragments. Every other feature of the description is borrowed from the familiar theories of Democritus and Epicurus.² It is evident that the deadly parallel had done its from the chief constituent. The indefeasible δύναμις remained, though the apparent property changed.

¹ This mode of explaining change of quality is throughout Epicurean. Cp. Lucretius, II, 730 ff.

² There is an interesting passage in Epicurus' *Epist. ad Herod.* 68 ff., which affords a striking parallel; but it has, I think, been expanded by scholia presenting the view of Asclepiades. In order to give my interpretation of the text I will translate it with a few notes. "Yea, shapes, colors, sizes, and weights, and whatever other things are predicated of body (matter) as predicates of all bodies [including the 'corpuscula intellectu sensa'] or of bodies visible or, in general, sensible [perhaps we should read καὶ κατ' αἰσθησιν ἄλλως γνωστοῖς],—we are not to think of them either (1) as self-existent entities,—for that is inconceivable,—nor (2) as something incorporeal appertaining to matter (body), nor (3) as parts of body; but (4) we are to hold that the entire body, collectively, possesses a specific character of its own [reading ἰδίαν for ἀίδιον] derived from them, but not as though it were a farrago [Here a scholion, giving a view of Asclepiades: 'as when a larger congeries arises from the δγκοι themselves, either from the primary δγκοι (cp. the 'primordia corpuscula' of Caelius) or from δγκοι which are smaller than any particular one of the parts of the whole (cp. Caelius: 'in infinita partium fragmenta solvantur')], but merely deriving from them collectively its own peculiar [reading ἰδίαν for ἀίδιον] character. [Another scholion, giving the

work. The later writers, depending more and more on emasculated excerpts for their knowledge of philosophical opinions, and finding only the barest outline of doctrines grouped in a way to suggest the points of resemblance without the distinctive differences which marked the individual systems, fell naturally into the pitfall of assuming that all taught the same doctrines. If for any reason it was thought desirable to amplify the traditional account, they did so by adding details from the system best known to them — in this case, the Epicurean. The case of Asclepiades is not without parallel; even Heraclitus¹ was converted to Atomism.

But the most striking parallel is that of Ecphantus, or as I think we may now safely say, Heraclides. Our main source is Hippolytus,² Bishop of Pontus, at the beginning of the

doctrine of Asclepiades: 'And all these (referring to the *σώματα* or *δγκοί*) are things possessed of specific (*ιδίαις*. Should we perhaps here have the misplaced *αἰδίους*?) qualities (the text has *ἐπιβολὰς*, 'perceptions,' the subjective correlate of qualities; cp. the 'sensibilia' of Caelius) and differences (again the subjective correlate, 'distinctions,' *διαλήψεις*), the congeries following (*i.e.* being qualitatively like the specific differences and qualities of the *δγκοί*) and not divorcing itself from them (it may be fanciful, but I am reminded of Anaxagoras, fr. 8 *ἀποκέκοπται πελέκει*) but taking its predicate in accordance with the total complexion (again the subjective correlate, 'conception,' *ἐννοίαν*) of the body." — The last sentence reminds one of Anaxagoras, who held *δτον δὲ πλείστον ἕκαστον ἔχει, τοῦτο δοκεῖν εἶναι τὴν φύσιν τοῦ πράγματος*. Cp. Arist. *Phys.* A. 4, 187^b 2-7.

¹ Aëtius I, 13, 2 (Diels, *Dox.* 312). Stobaeus here has 'Ἡράκλειτος πρὸ τοῦ ἐνὸς δοκεῖ τισι ψήγματα καταλείπειν; Ps. Plutarch has 'Ἡ. ψηγματίαν τινα ἐλάχιστα καὶ ἀμερῇ εἰσάγει. Diels, ad loc., suggests that ἐλάχιστα καὶ ἀμερῇ was added here by mistake, transferred from the next section devoted to Xenocrates and Diodorus Cronus; but this is specious rather than probable. The doctrine there attributed to Xenocrates is probably false, and a somewhat similar case occurs in I, 14, 3 and 4, where (even if, with Diels, we interchange the names 'Leucippus' and 'Anaxagoras') the assimilation of the *ὁμοιομερῇ* to the *ἄτομα*, both being pronounced *πολυσχήμονα*, is evident and misleading, to say the least. To Leucippus, differences of *σχῆμα* were ultimate; to Anaxagoras, they must have been almost unmeaning. Other cases occur, which I forbear to mention. For the *ψήγματα πρὸ τοῦ ἐνὸς* (an *ἄποιος ὅλη*?), see p. 13, n. 4.

² *Philosoph.* A, 15 (Diels, *Dox.* 566), 'Ἐκφαντός τις Συρακοσίους ἔφη μὴ εἶναι ἀληθινὴν τῶν ὄντων λαβεῖν γινώσκιν, ὀρίζειν δὲ ὡς νομίζειν. τὰ μὲν πρῶτα ἀδιάρετα εἶναι σώματα καὶ παραλλαγὰς αὐτῶν τρεῖς ὑπάρχειν, μέγεθος σχῆμα δύναμις, ἐξ ὧν τὰ αἰσθητὰ γίνεσθαι. εἶναι δὲ τὸ πᾶν αὐτῶν ὠρισμένον καὶ τοῦτο ἄπειρον (probably, with Duncker, we should read *ὠρισμένων κατὰ τοῦτο, ἄπειρον*). *κινεῖσθαι δὲ τὰ σώματα μήτε ὑπὸ βάρους μήτε πληγῆς, ἀλλ' ὑπὸ θείας δυνάμεως, ἣν νοῦν καὶ*

third century. His statement is in part unintelligible, because of corruptions in the text, but we can make out the main points. Ecphantus of Syracuse said that the elements were indivisible corpuscles, and differed among themselves in three respects, in size, in shape, and in quality. Then follows an unintelligible sentence, which has been plausibly emended to read: 'though determinate in this respect, their number is infinite.' The account continues: The corpuscles are moved neither by gravity nor by impact, but by divine power, which he calls reason or soul. The cosmos is the express image (*ἰδέα*) of this, wherefore also it was made spherical by the divine power. The earth as the center of the cosmos turns from west to east about its own axis.

If now, as I suggested above, we combine this statement with what we have learned about Heraclides, we obtain a view similar in its main outlines to that of Asclepiades. The corpuscles are qualitatively determined, and they are now characterized as atomic, now as divisible. The doctrine of Heraclides differs radically from that of Asclepiades in one important particular; the former, as a true disciple of Plato,¹ recognizes the hand of God in the operations of nature, whereas the latter insists on a purely naturalistic and mechanical interpretation. But even in his doctrine touching the nature of God, Heraclides was subjected to a process of assimilation to the views of the Atomists.²

ψυχὴν προσαγορεύει. τούτου μὲν οὖν τὸν κόσμον εἶναι ἰδέαν, δι' ἃ καὶ σφαιροειδῆ ὑπὸ θεῆας δυνάμεως γεγονέναι. τὴν δὲ γῆν μέσον κόσμον κινεῖσθαι περὶ τὸ αὐτῆς κέντρον ὡς πρὸς ἀνατολήν. Cp. Aëtius, III, 12, 3 (Diels, *Dox.* 378). This constitutes the sum of our record regarding Ecphantus excepting the report of his atomic monads to be considered later. In the passage quoted above note that the ἀδιαίρετα σώματα possess δύναμις or quality. This use of δύναμις is probably derived from medicine (cp. Hippocrates, above, p. 8, n. 2), where properties appear definitely as functional. That the σώματα are said to differ in size and shape, need not detain us; the statement is doubtless true, but (as in the case of Anaxagoras, see preceding note) lacks significance, except as an indication of the assimilation of corpuscular doctrines to Atomism, where these distinctions were fundamental because they served to explain the resultant differences in quality.

¹ Zeller, op. cit. I, 495, called attention to the fact that this doctrine was a reminiscence of the Platonic.

² Cicero, *N. D.* I, 13, 34, Ex eadem Platonis schola Ponticus Heraclides puerilibus fabulis refertur libros et modo mundum, tum mentem divinam (sc. deum) esse

If we accept the identification of Ecphantus and Heraclides, we are enabled to explain another striking point in the doxographic tradition regarding the former. Attention was above directed to the second table of philosophers given by Sextus and its congeners, and it was noted that the omission of the distinction between the two groups, containing the thinkers who posited respectively corporeal and incorporeal elements, combined with the addition of Strato's corporeal 'qualities' at the end of the list, might have led naturally to the supposition that the elements of the Pythagoreans and the 'mathematicians' likewise were corporeal. Here, then, was the natural place to class Ecphantus, known to be intimately associated with Heraclides, and hence assumed to be an Atomist.¹ As a Pythagorean, he was peculiarly fitted for his function. Hence, we are prepared to read in Stobaeus:² 'Ecphantus of Syracuse, one of the Pythagoreans, said that the elements of all things were atomic corpuscles and the void; for he first³ represented the Pythagorean monads as corporeal.'

putat, errantibus etiam stellis divinitatem tribuit *sensuque deum privat et eius formam mutabilem esse vult* eodemque in libro rursus terram et caelum refert in deos. Krische, *Forschungen*, p. 335 ff., regarded the words in italics as a mere inference of the Epicurean quoted by Cicero, and Zeller, *op. cit.* II, ^a1034, 4, agrees with him. Diels, *Dox.*, 124, says 'nescio qua vel oblivione vel levitate ipsum Heraclidem Ponticum talia prodentem fecit.' It seems more probable to me that the words, which fit ill into the sentence, are a gloss added by a later hand, when the assimilation of all corpuscular theories to the Epicurean was in vogue, than that the confusion existed in the days of Cicero.

¹ Mention was made above (p. 16, n. 1) of the ἀμερῇ καὶ ἐλάχιστα attributed to Xenocrates, he being classed with Diodorus Cronus. Zeller, II, ^a1018, n. 1, discusses this point. It seems to me a clear case of confusion, closely parallel to that of Ecphantus, and adds another argument in favor of the identification of Ecphantus and Heraclides.

² Aëtius, I, 3, 19 (Diels, *Dox.* 286) Ἐκφάντος Συρακοσίου εἰς τῶν Πυθαγορείων πίντων τὰ ἀδιαίρετα σώματα καὶ τὸ κενόν. τὰς γὰρ Πυθαγορικούς μονάδας οὗτος πρῶτος ἀπεφάνετο σωματικούς.

³ Mention was made above (p. 6, n. 1) of the interest in εὐρήματα in Alexandrine times. Heraclides himself appears to have been a leader in this department. Who it was who discovered this 'discovery' of Ecphantus we do not know; but we do know that there were many untenable hypotheses put forward. The cases of Hicetas and Ecphantus probably belong to this class and their 'discoveries' were published at a time when real criticism was at an end. That Cicero quotes Theophrastus for Hicetas is probably due to the confusion noted above, p. 6, n. 2

We have seen that in the strange farrago, presented by Caelius Aurelianus as a statement of the philosophical opinions of Asclepiades, nothing remained of the true account to be culled from Galen and Sextus but the fact that the corpuscles, though called atoms, were held to be subject to breaking into infinitesimal fragments. This may have been due to such names as *θραύσματα* used to characterize them in the doxographic literature, but it may have been nothing more than a recognition of the meaning of the distinctive name, *ἄναρμοι ὄγκοι*, which Heraclides and Asclepiades gave to their corpuscles. The adjective *ἄναρμος* has received a surprising variety of interpretations;¹ but no one, so far as I am aware, has been able to do more than guess at its meaning. Those who have discussed the subject have apparently assumed that the word occurs only in connection with *ὄγκοι*; but in this they are mistaken, probably misled by the *lexica*.² The word does occur elsewhere, and in connections which enable us to determine its meaning with certainty.

In Philostratus, *Περὶ Γυμναστικῆς*, 29, we read,³ 'The offspring of parents of advanced years are to be detected as follows: their skin is tender; the [flesh about the] collar-bones is sunken; the veins protrude, like those of men who have endured hardships; the hip is *ἄναρμον*; and the muscles weak.' Ib. 48:⁴ 'A variety of signs will serve to detect

¹ It is not necessary to catalogue them here, since nobody has presented any arguments but those which were suggested by the systems of Heraclides and Asclepiades. Some were of course correct, but they were mere guesses.

² Except Herwerden, to whom I owe the references. He says, *Lexicon Graec. Suppl.*: "*ἄναρμος*: Philostrat. De Gymn. XXIX, 5 et XLVIII, 13 Volckmar *ισχίον ἀναρμον*, coxendicem laxam, tribuit viris provectoribus aut rei venereae indulgentibus."

³ P. 156, 1 f., ed. Jüthner: ἡ δὲ ἐκ προηρόντων (sc. σπορά) ὦδε ἐλεγκτέα· λεπτόν μὲν τοῖς τὸ δέρμα, κυθῶδεις δὲ αἱ κλεῖδες, ὑπανεστηκυῖαι δὲ αἱ φλέβες καθάπερ τοῖς πεπονηκόσι, καὶ ἰσχίον τοῖς ἀναρμον καὶ τὰ μυῶδη ἀσθενῇ.

⁴ P. 174, 28 f., ed. Jüthner: τοὺς δ' ἐξ ἀφροδισίων ἡκοντας γυμναζομένους μὲν πλεῖω ἐλέγξει· τὴν ἰσχύν τε γὰρ ὑποδεωκότες καὶ στενοὶ τὸ πνεῦμα καὶ τὰς ὁρμὰς ἀτολμοὶ καὶ ἀπανθοῦντες τῶν πόνων καὶ τὰ τοιαῦτα ἀλλισκεσθαι· ἀποδύντας δὲ κλεῖς τε ἀν' ἀποδείξαιτο κοίλη καὶ ἰσχίον ἀναρμον καὶ πλευρὰ ὑποχαράττουσα καὶ ψυχρότης αἵματος. Jüthner rightly directs attention to the similarity of the two passages. It is evident that they aim to represent a frame loosely put together and broken in strength. A good firm hip is a prime requisite for an athlete. In

those who come to gymnastic training from sexual debauch. Their strength is toned down; they are short of breath; they lack spirit in undertakings; they are pale after strenuous exercise, and may be discovered accordingly. When they strip, the hollow collar-bone,¹ the *ἄναρμον* hip, the plainly marked ribs, and the chill² of the blood, would betray them.' It is at once clear that the *ἄναρμον ἰσχύιον* is adduced as a mark and proof of weakness,³ and a great number of related passages, dating from Hippocrates to Oribasius, establishes

c. 34 the requirements for a boxer are set forth: *ἐρειδέτω δὲ αὐτὸν καὶ ἰσχύιον εὐπαγές* (well-knit, the opposite of *ἀναρμον*!)· ἡ γὰρ προβολὴ τῶν χειρῶν ἀποκρεμάννυσσι τ[ὸ σ]ῶ[μα, εἰ] μὴ ἐπὶ βεβαίου ὀχοῖτο τοῦ ἰσχύιον. Jüthner renders *ἀναρμον ἰσχύιον* "ungefüge Hüfte."

¹ Such persons are often described as emaciate, more especially about the eyes (Arist. *de Generat. Animal.* 747^a 13-17; Galen, vi, 443 K.; Oribasius, v, 587, B. and D.); cp. [Arist.] *Physiogn.* 808^a 12; [Arist.] *Probl.* 876^a 36; 876^b 5; 879^b 8-11, 30; 880^b 8) and the hips ([Arist.] *Probl.* 876^a 36 ff. and 879^b 8-11, 30).

² Cp. Galen, vi, 401 ff. (*ψυχρούς*), and Arist. *de Generat. Animal.* 747^a 3 (*ψυχρόν*). This marks them as *θηλυκοί*—effeminate; for women are colder than men.

³ Strength resides chiefly in the *ἄρθρα* and in the *νεῦρα*, which are intimately associated. Arist. *de Generat. Animal.* 787^b 10 ἔστι μὲν οὖν πᾶσιν ἡ ἰσχύς ἐν τοῖς νείροις, διὸ καὶ τὰ ἀκμάζοντα ἰσχύει μάλλον. *Ἀναρθρα* γὰρ τὰ νέα μάλλον καὶ *ἀνευρα*. [Arist.] *Probl.* 862^a 30 ἡ δύναμις ἡμῶν ἐν τοῖς ἄρθροις ἐστίν. Arist. *Hist. Animal.* 538^b 7 ἀνευρότερον καὶ ἀναρθρότερον τὸ θῆλυ μάλλον. Contrast *Physiogn.* 809^b 8 ff., and ib. 29 ff. As women are *γονύκροτοι* (ib. 809^b 8), so also the *κίναδοι* (ib. 808^a 13, 810^a 34). Contrast ib. 810^a 15 ff. Ib. 810^b 36 *δοῖς δὲ οἱ ὄμοι ἀσθενεῖς, ἀναρθροί, μαλακοὶ τὰς ψυχάς*. It is thus clear that *ἀναρμος* = *ἀναρθρος* and, like *ἀνευρος*, denotes weakness. We might render it 'hip-shot.' Its meaning is made more definite by such words as *λίειν, ἐκλίειν*. [Arist.] *Probl.* 879^a 4 οἱ ἀφροδισιάζοντες ἐκλύονται καὶ ἀσθενέστεροι γίνονται. This is the opposite of *ἐπιτείνειν*; cp. ib. 873^a 30-36, and 953^b 4 ff. (of wine). Relaxation succeeds tension (cp. ib. 879^a 11 ff.). So, too, of other emotions; thus Eurip. *Herc. Fur.* 1395 *ἄρθρα γὰρ πέπηγέ μου*, and *Hippol.* 199 *λέλυμα μελέων σύνδεσμα* apply to different phases of the same experience. So *ἔρως* (like sleep, death, fear, wine, sickness) is *λυσιμελής*; contrariwise Hippocrates, Π. τῶν ἐν τῷ παθῶν, 13 (vii, 200 L.) καὶ ἀπὸ λαγνείης· τὸδε οὖν πάσχει· ὁδύνῃ δὲ ἐμπίπτει αὐτῷ . . . καὶ ἐς τὰ ἄρθρα τῶν σκελέων, ὥστε ἐνίοτε οὐ δύναται ξυγκάμπτειν. Cp. also *ἀναρθροί*, Littré, Hippocrates, ii, 90, and *διηρθρωμένους καὶ ἐντόνους*, ib. ii, 92, and ix, 16, etc.; and Galen, vi, 443 K., and Oribasius, v, 587, B. and D. In Plato, *Phaedr.* 253 E the lascivious stud is *εἰκη συμπεφορημένος*. Psalm 22, 14 'I am poured out like water, and all my bones are out of joint.' In Latin, compare the uses of *fluere, laxus* (metaphorical and late), *dissolutus, enervis, enervus, enervatus, elumbis*, and *fractus*.

beyond the possibility of doubt that ἄναρμος is the equivalent of ἄναρθρος, and means 'hip-shot,' 'loosely knit,' 'frail.'¹ Hence we may conclude that the epithet θραυστοί, as applied to the ὄγκοι, is only an interpretation of the less familiar ἄναρμοι.

¹ The molecules which compose the soul are called *admodum delicatae* by Chalcidius in *Plat. Tim.*, c. 215, Wrobel. There is a bare possibility that in a secondary application ἄναρμος meant 'not-fitting,' either (1) in the sense that the molecules did not combine into solid masses (excluding a void), or (2) in the sense that the molecules did not fit the pores. As to (1), Diels holds that Strato and Heraclides were nearly agreed in their physical principles; hence it is of interest to note the following words of Strato (p. 6, 23 ff. Diels), τὰ δὲ τοῦ ἀέρος σώματα συνερίδει μὲν πρὸς ἀλλήλα, οὐ κατὰ πᾶν δὲ μέρος ἐφαρμόζει, ἀλλ' ἔχει τινὰ διαστήματα μεταξὺ κενά. As to (2), Aëtius, IV, 9, 6 (Diels, *Dox.*, 397), classes Heraclides among those who held the doctrine of the symmetry of pores. On the other hand, it is contended that Asclepiades discarded this doctrine, at least in the explanation of the phenomena of magnetism. See Fritzsche, "Der Magnet und die Athmung in antiken Theorien," *Rh. M.*, LVII (1902), 363-391.